



US009241194B2

(12) **United States Patent**
Davison et al.

(10) **Patent No.:** **US 9,241,194 B2**
(45) **Date of Patent:** **Jan. 19, 2016**

(54) **MULTI-VIEW OF MEDIA CONTENT**

(56) **References Cited**

(75) Inventors: **Jeffrey T. Davison**, Hancock, NH (US);
Scott D. Arena, Peabody, MA (US)

U.S. PATENT DOCUMENTS

(73) Assignee: **VERIZON PATENT AND
LICENSING INC.**, Basking Ridge, NJ
(US)

6,177,931	B1 *	1/2001	Alexander et al.	725/52
7,174,512	B2 *	2/2007	Martin et al.	715/719
8,813,133	B1 *	8/2014	DePrez et al.	725/61
2002/0054062	A1 *	5/2002	Gerba et al.	345/716
2002/0166122	A1 *	11/2002	Kikinis et al.	725/56
2006/0107291	A1 *	5/2006	Heer	725/39
2009/0132942	A1 *	5/2009	Santoro et al.	715/765
2011/0093897	A1 *	4/2011	Gerba et al.	725/42

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 1003 days.

* cited by examiner

(21) Appl. No.: **12/607,489**

Primary Examiner — Nnenna Ekpo

(22) Filed: **Oct. 28, 2009**

(65) **Prior Publication Data**

US 2011/0099586 A1 Apr. 28, 2011

(57) **ABSTRACT**

(51) **Int. Cl.**
G06F 3/00 (2006.01)
G06F 13/00 (2006.01)
H04N 5/445 (2011.01)
H04N 21/482 (2011.01)

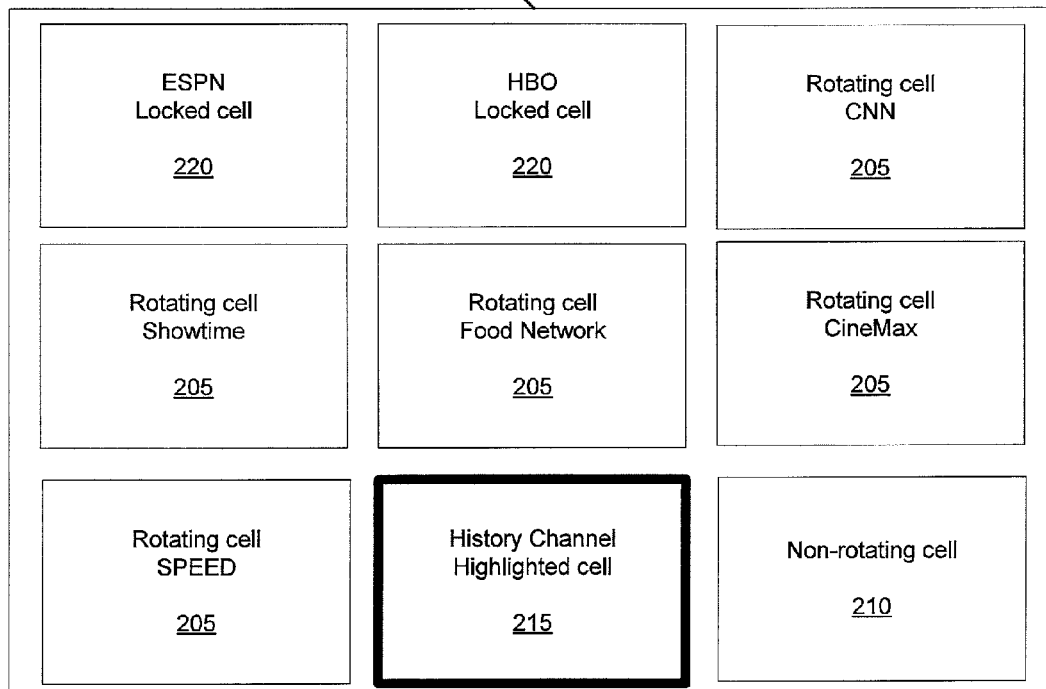
In a content processing device, a set of media channels to be provided in a graphical user interface is identified. Each channel in a subset of the channels is assigned to a cell that is included in a set of cells in the graphical user interface. The graphical user interface is provided to a display. Upon a predetermined indication, at least some of the subset of the channels are rotated through at least a subset of the cells, whereby the display shows each of the cells in the subset of cells to be including a channel other than a channel that was included in the cell before the rotating was performed.

(52) **U.S. Cl.**
CPC **H04N 21/482** (2013.01)

(58) **Field of Classification Search**
USPC 725/56, 38, 41, 43, 48, 131, 139, 151
See application file for complete search history.

23 Claims, 12 Drawing Sheets

112 ?



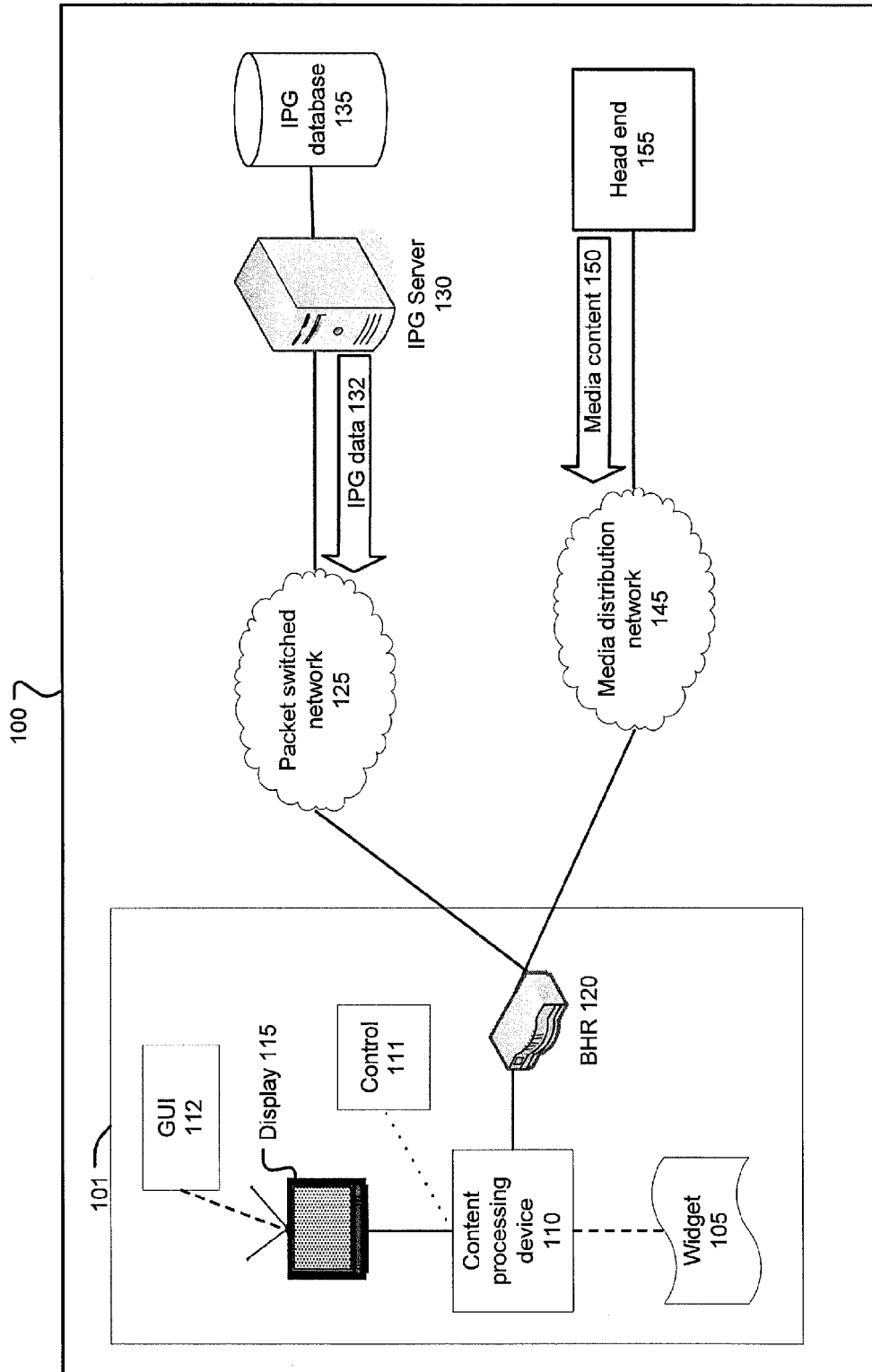


FIG. 1

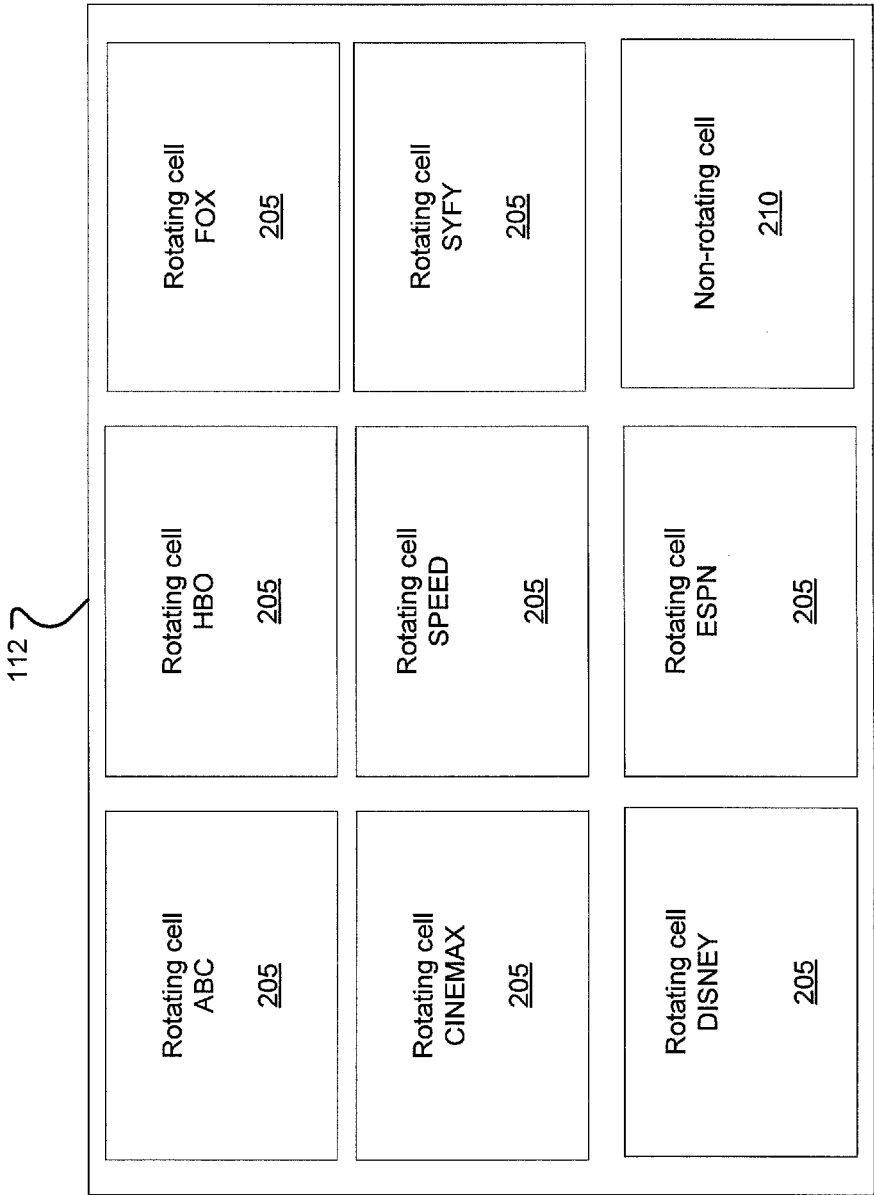


FIG. 2A

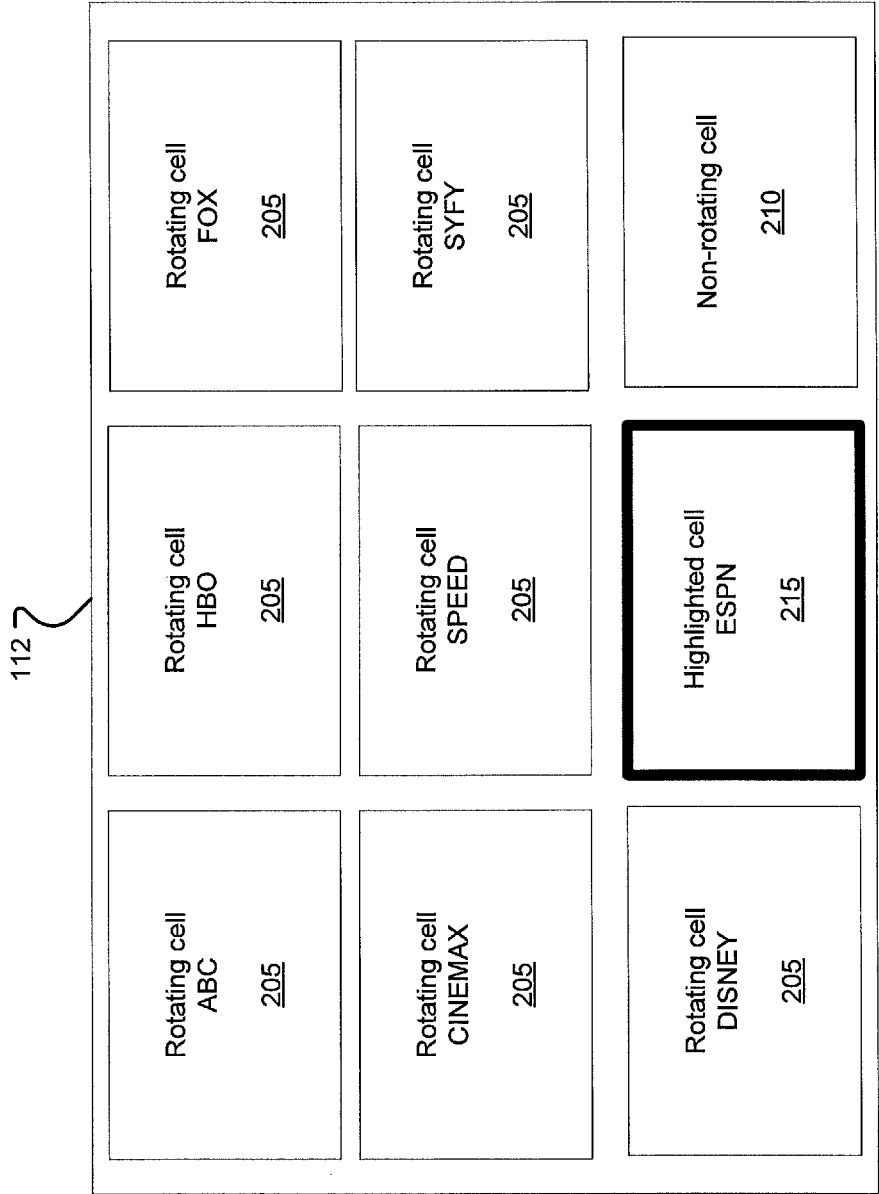


FIG. 2B

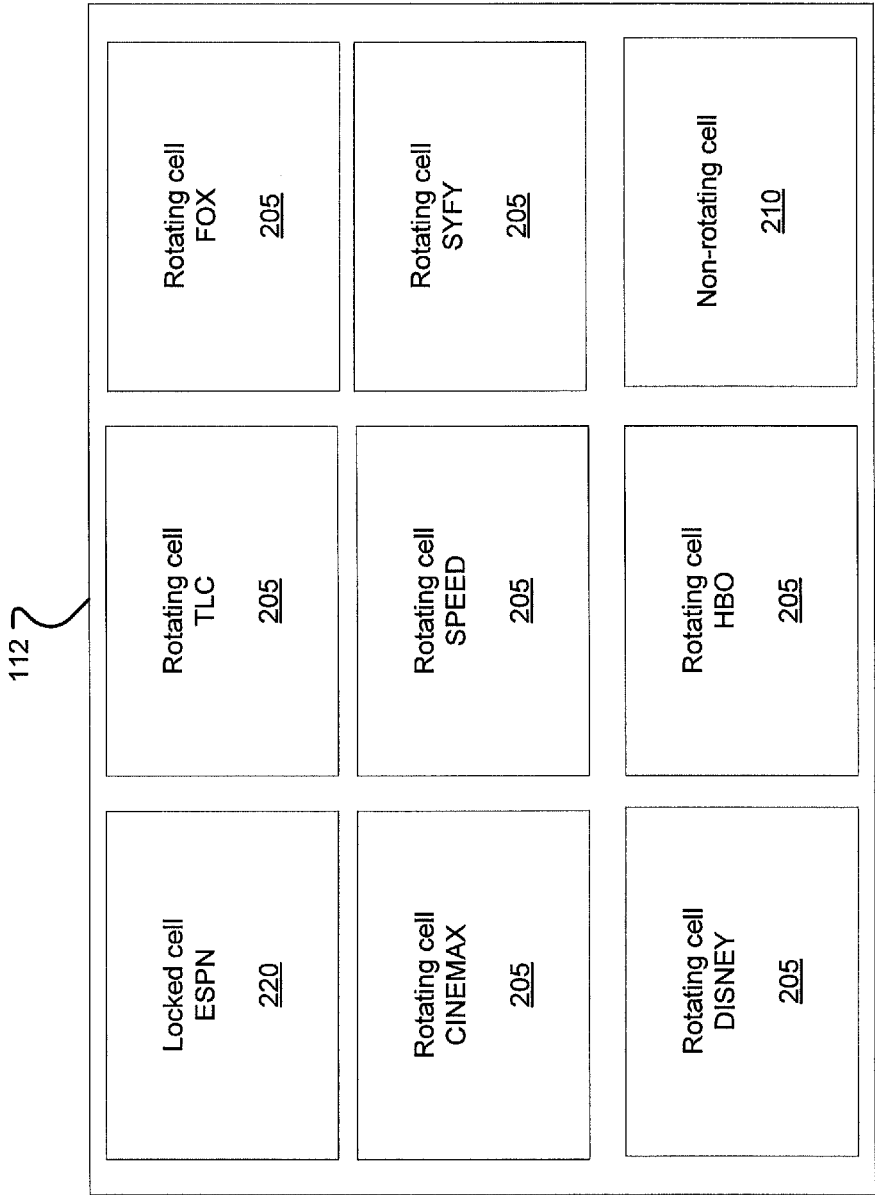


FIG. 2C

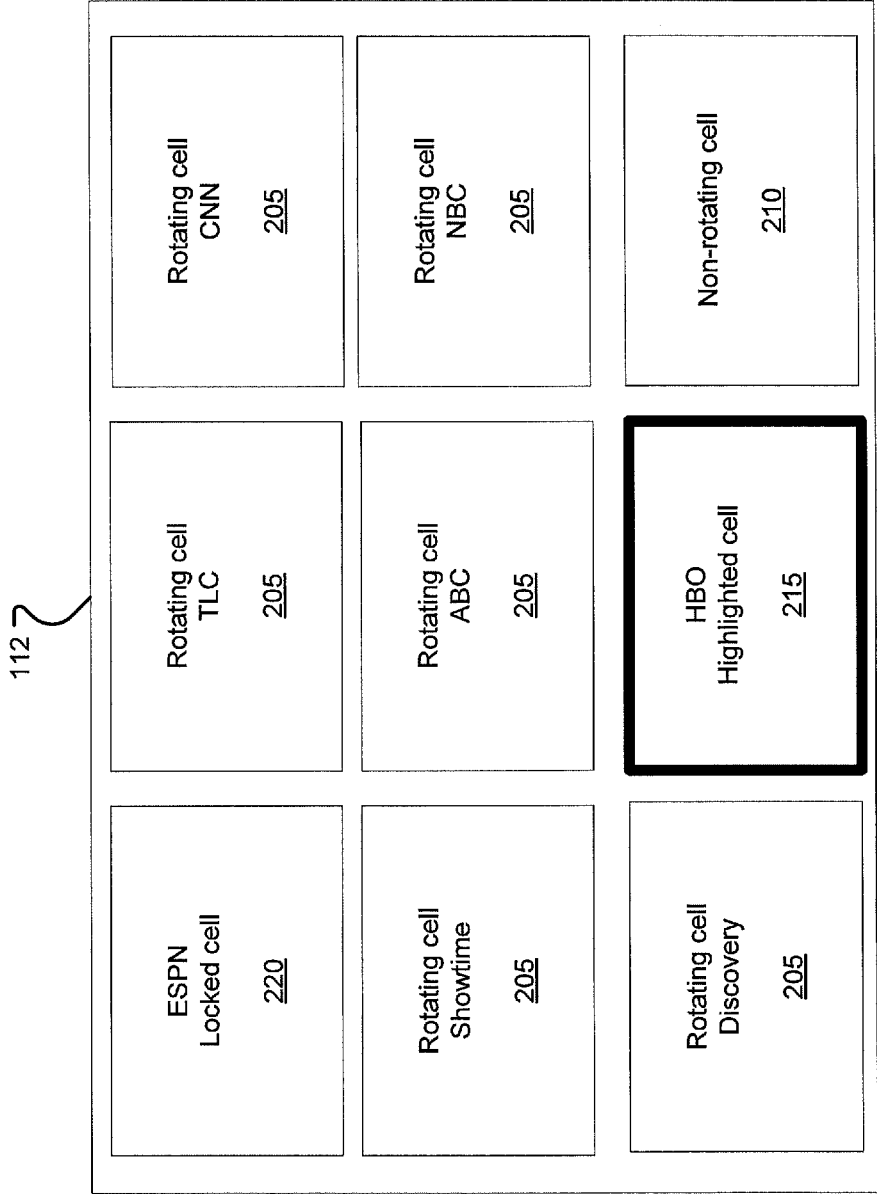


FIG. 2D

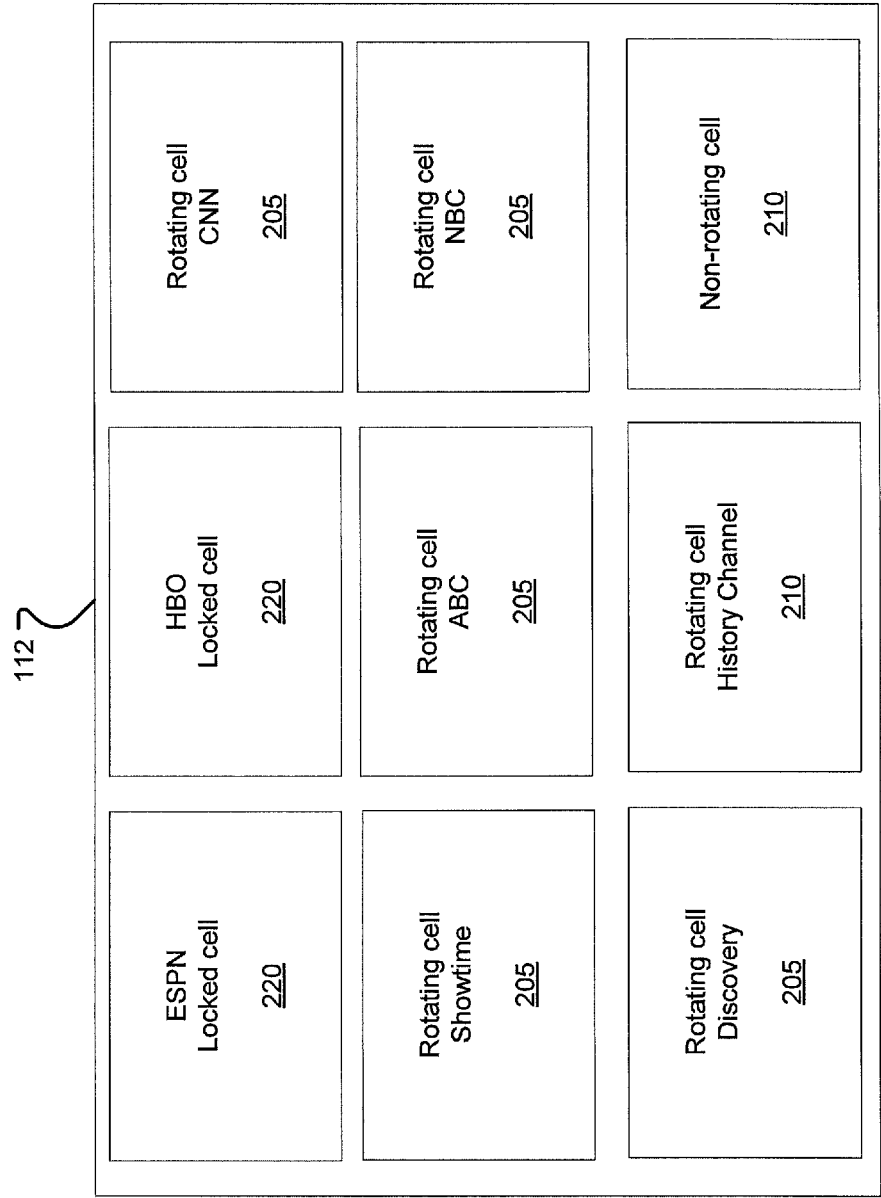


FIG. 2E

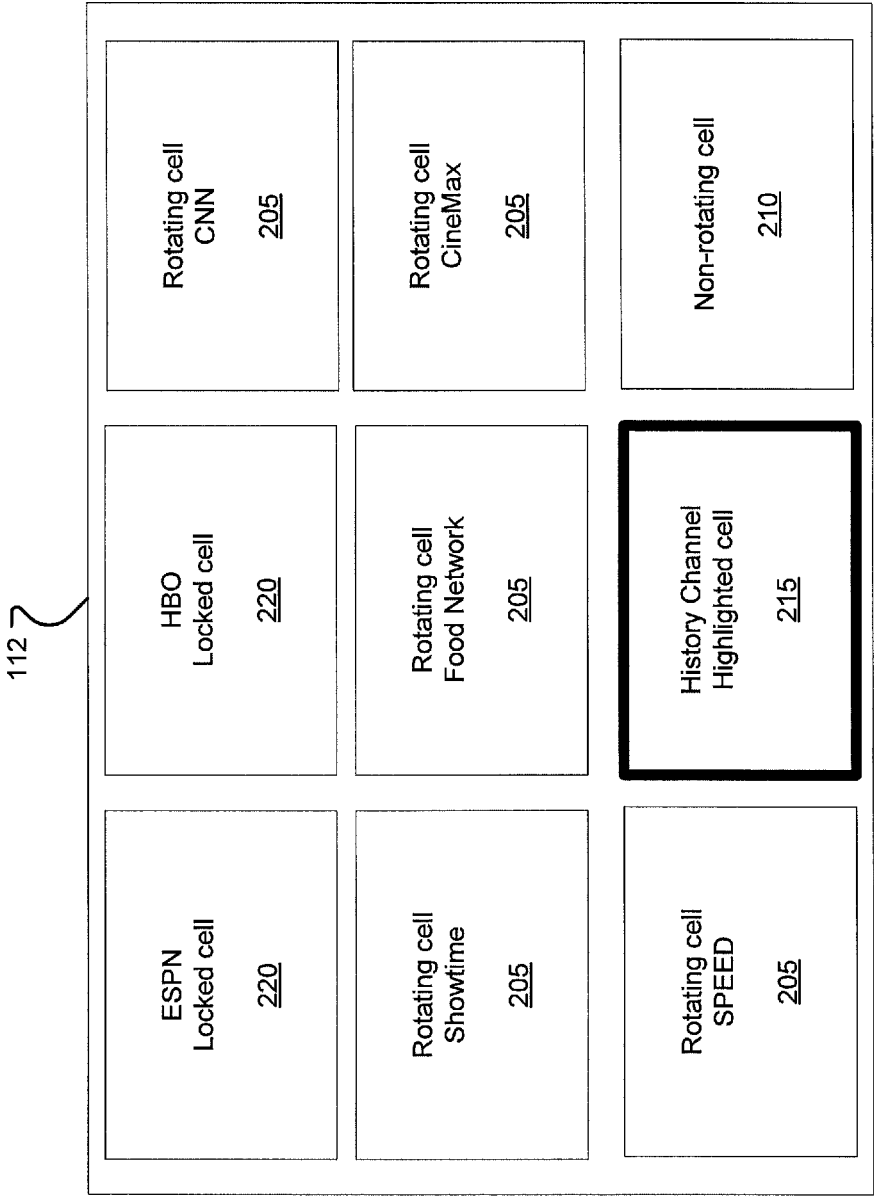


FIG. 2F

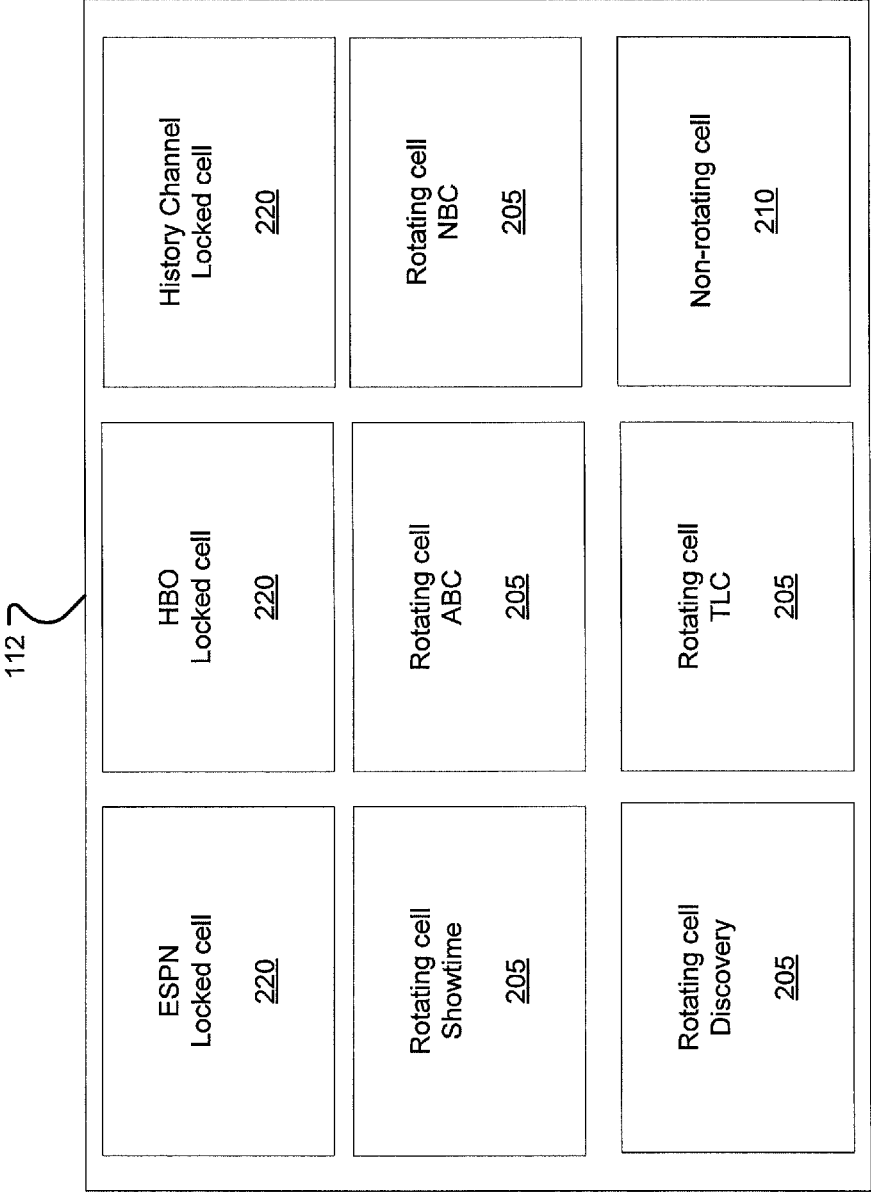
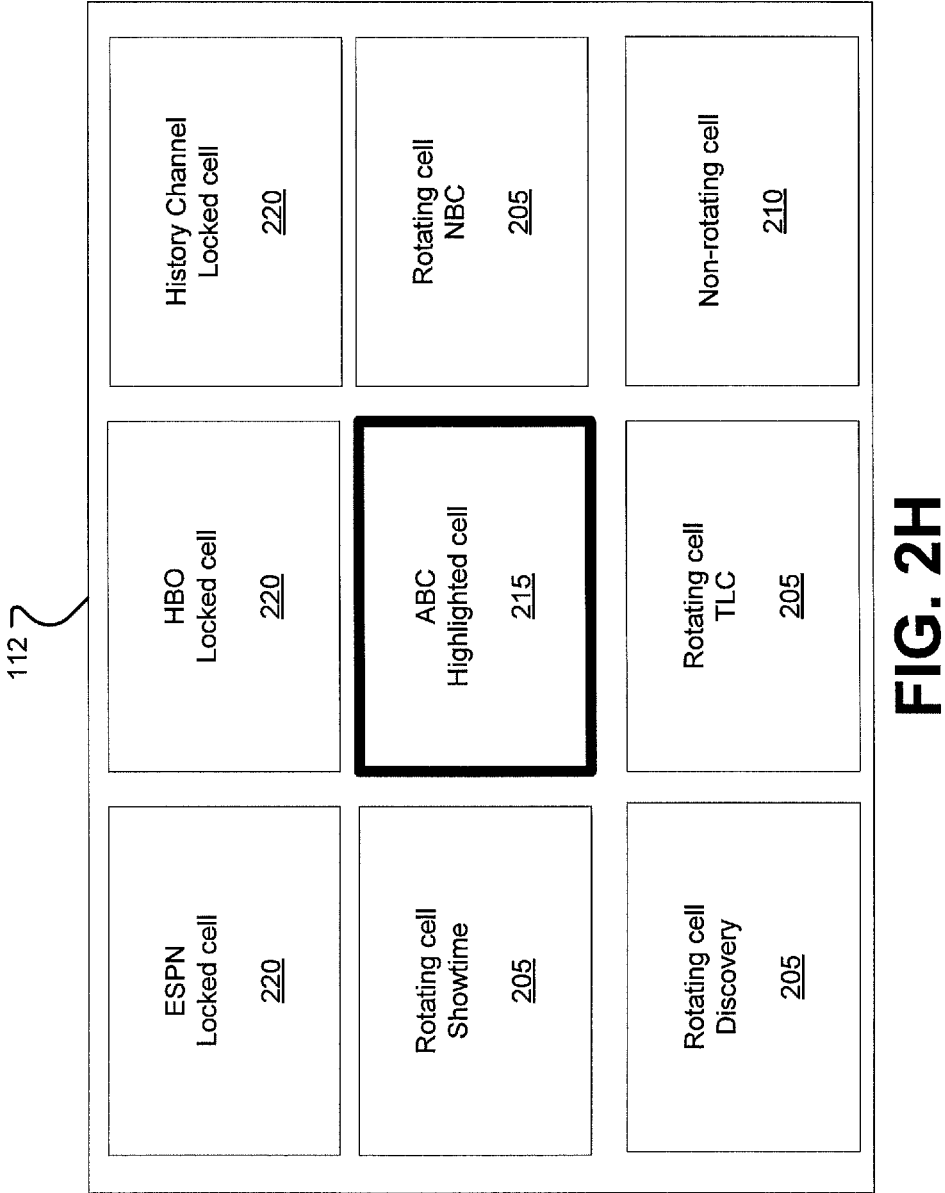


FIG. 2G



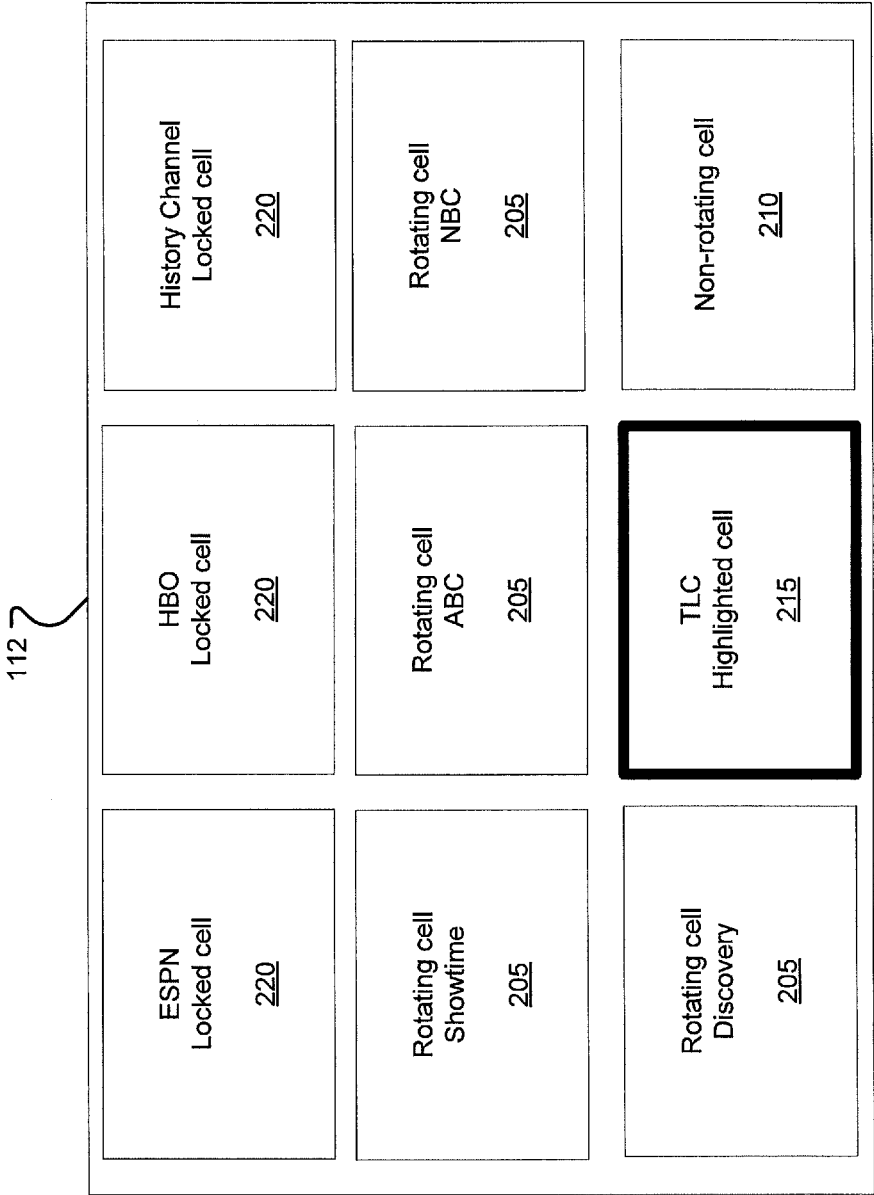


FIG. 2I

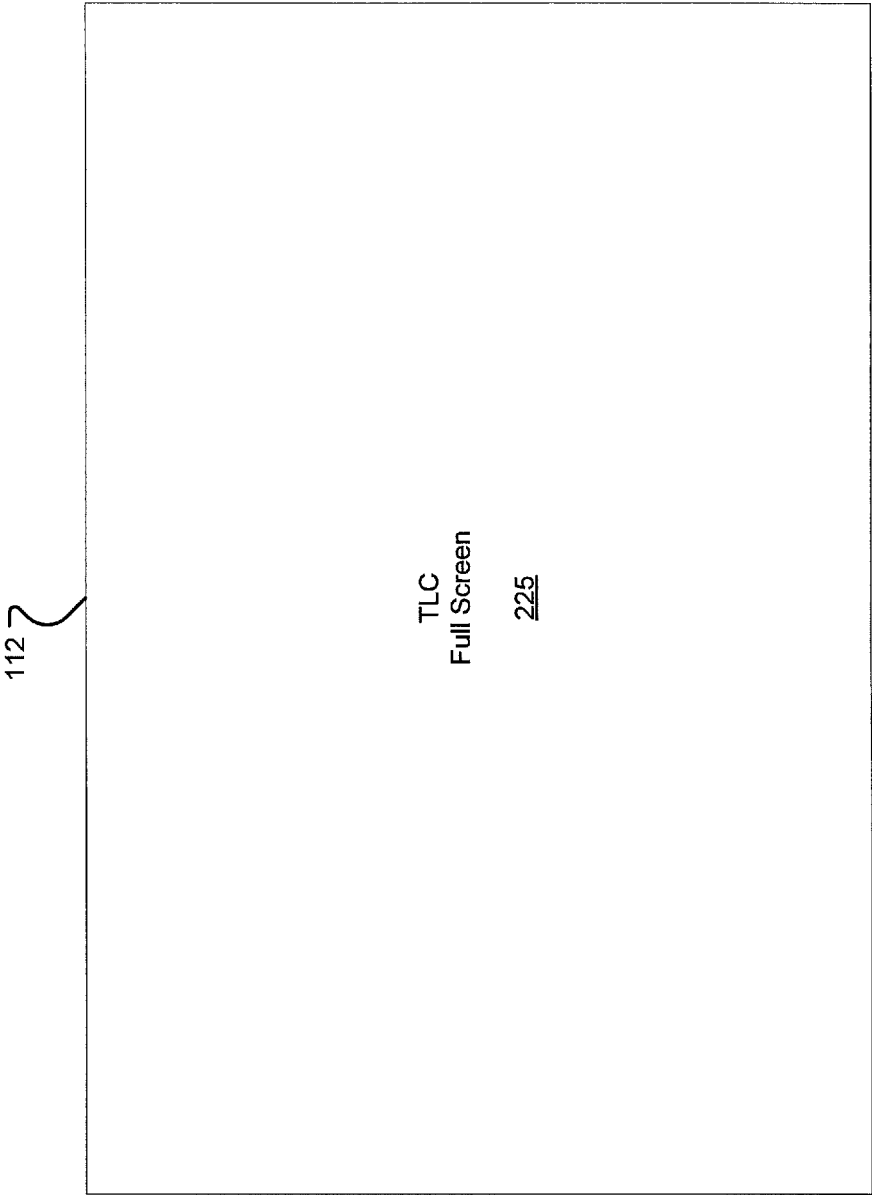
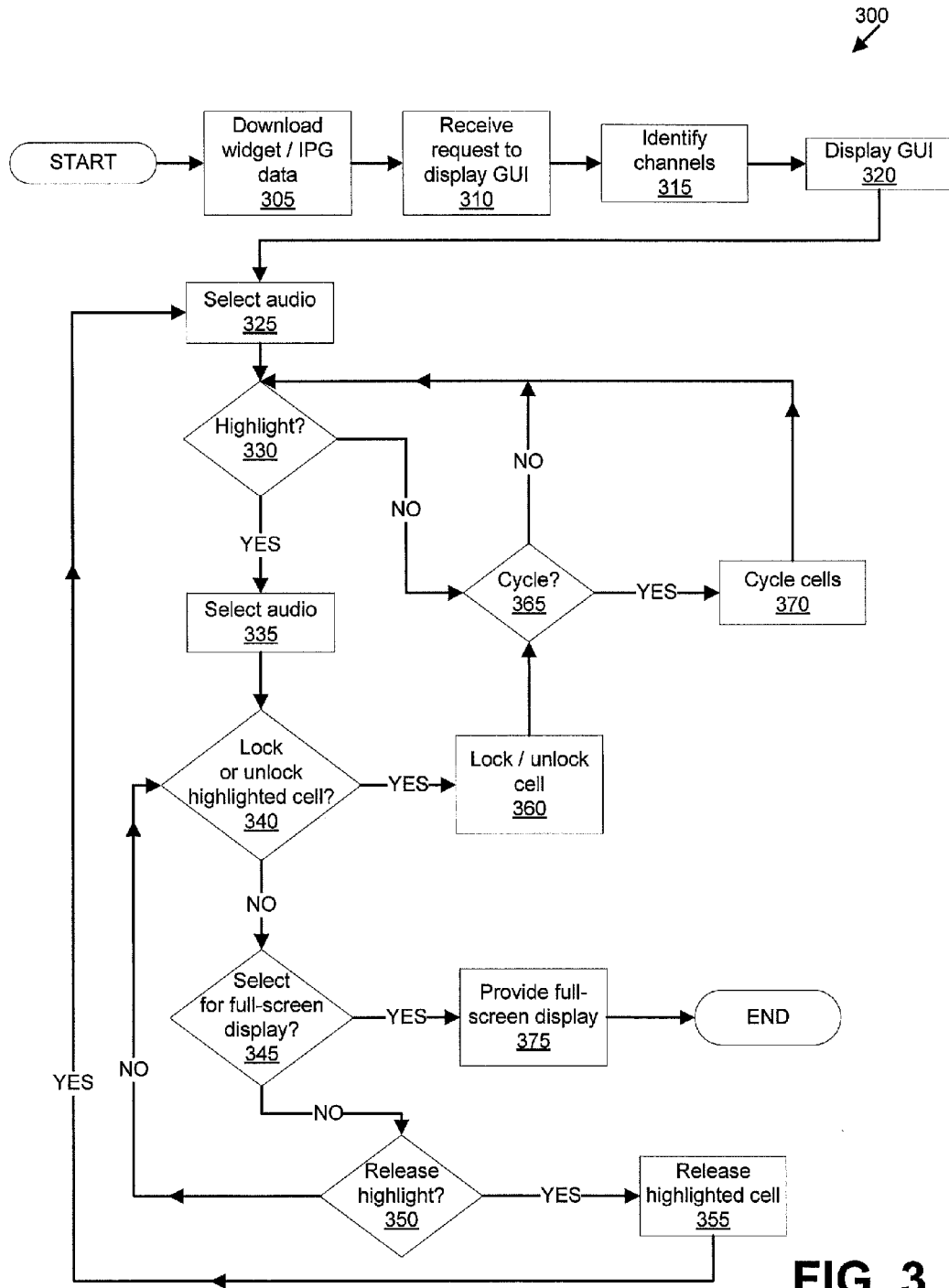


FIG. 2J



MULTI-VIEW OF MEDIA CONTENT

BACKGROUND INFORMATION

Viewers of video and other media content generally have a multitude of content available to them. For example, a content processing device such as a set top box may access many different media channels. Sorting through these many channels, and deciding which media content to access for viewing, listening, etc., can often be overwhelming. Often, viewers sequentially access tens or even hundreds of channels of media content in deciding which to access. Such access can be tedious and time-consuming. Further, a media provider may have difficulty in calling to the viewer's attention either channels that may be of interest to the viewer, or that the media provider may desire to promote, e.g., premium channels, pay-per-view channels, etc.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 illustrates an exemplary system for delivering an interactive program guide.

FIG. 2A illustrates an exemplary display of media content in rotating and non-rotating cells in a graphical user interface.

FIG. 2B illustrates an exemplary display including a highlighted cell, along with rotating and non-rotating cells, in a graphical user interface.

FIG. 2C illustrates an exemplary display including a locked cell, along with rotating and non-rotating cells, in a graphical user interface.

FIG. 2D illustrates an exemplary display including a highlighted cell, along with a locked cell, and rotating and non-rotating cells, in a graphical user interface.

FIG. 2E illustrates an exemplary display including two locked cells, and rotating and non-rotating cells, in a graphical user interface.

FIG. 2F illustrates an exemplary display including a highlighted cell, along with three locked cells, and rotating and non-rotating cells, in a graphical user interface.

FIG. 2G illustrates an exemplary display including three locked cells, and rotating and non-rotating cells, in a graphical user interface.

FIG. 2H illustrates an exemplary display including a highlighted cell, along with three locked cells, and rotating and non-rotating cells, in a graphical user interface.

FIG. 2I illustrates an exemplary display including a second highlighted cell, along with three locked cells, and rotating and non-rotating cells, in a graphical user interface.

FIG. 2J illustrates an exemplary display of media content in a full screen.

FIG. 3 illustrates an exemplary process for providing multi-view channels.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

FIG. 1 illustrates an exemplary system **100** for delivering an interactive program guide.

As illustrated in FIG. 1, a customer premises **101** includes a content processing device **110**, which may be controlled by a user through a control **111**, to view video on a video display **115**. Content processing device **110** may be a set top box (STB) or similar device known for receiving a media signal, e.g., a video signal, from a network and for providing media programming, e.g., audio, video, games, etc. to a device such as video display **115**.

A widget **105** includes computer-executable instructions that are generally stored in a memory of content processing device **110**, and that may be executed by a processor included within content processing device **110**. Instructions in widget **105** may include instructions for displaying content, including interactive program guide data (IPG data) **132**, in a graphical user interface (GUI) **112** included in display **115**, sometimes according to input provided by a user through control **111**.

Control **111** is generally a remote control that selectively communicates with content processing device **110** through known wired or wireless communications, such as infrared (IR) communications. Control **111** generally includes numeric keys for selecting channels of video programming, as well as other keys for making selections and request according to menus provided on video display **115**, in addition to arrow keys and the like for changing channels, changing volume, etc. Video display **115** may be a television receiver such as is known, including a conventional television or a high definition television (HDTV).

Content processing device **110** generally includes a processor and a memory, as well as a computer readable medium such as a disk or the like for storing data and computer-executable instructions, e.g., widget **105**. Content processing device **110** selectively communicates, via a broadband home router (BHR) **120**, with a packet switched network **125** and/or a video distribution network **145**. An interactive program guide (IPG) server **130** also selectively communicates with router **120**, generally via network **125**.

GUI **112** allows viewers of display **115** to obtain information and to select content, generally by navigating and making selections using control device **111**.

IPG server **130** generally includes a processor and a memory, as well as a computer readable medium such as a disk or the like for storing data, e.g., IPG data **132**, and computer executable-instructions, e.g., widget **105**, where the data **132** and widget **105** may be downloaded to content processing device **110**. IPG server **130** provides IPG data **132** and widget **105** to content processing device **110** to provide an interactive program guide graphical user interface in GUI **112**. Accordingly, widget **105** and IPG data **132** may be downloaded to content processing device and then updated on a regular basis. For example, widget **105** may be updated periodically, e.g., once every twenty-four hours, while data **132** may be updated more frequently, or as warranted, e.g., when available content **150** changes, or new content **150** becomes available.

An IPG database **135** may be included within IPG server **130**, or may be part of a separate computing system. In any event, IPG server **130** is generally configured to selectively retrieve information from IPG database **135** in response to requests for IPG data **132**. IPG data **132** includes data concerning channels of media content, e.g., video content available to content processing device **110**.

A media distribution network **145** is a network for providing media content **150**, e.g., a video signal such as is known. For example, network **145** may include hardware and software for providing a video signal via coaxial cable and/or fiber optic cable. Further, media content **150** may be provided to the video distribution network **145** as a video signal from a head end **155**, as is known.

One or more video hub offices (not pictured), sometimes referred to as "VHOs," may serve as a point of aggregation and distribution for media content. For example, a video signal, e.g., a video signal encoded as a Motion Picture Experts Group-2 (MPEG 2) stream, may be provided from a head end through a media distribution network **145** to a video

hub office. Accordingly, IPG server **130** may be located in a VHO. Further, IPG server **130** or some other server in the VHO may receive media content **150** from the media distribution network **145**, e.g., one or more video signals, and may combine such media data **150** with IPG data **132** for delivery to content processing device **110**.

Packet switched network **125** is generally an internet protocol (IP) network. As such, network **125** uses known protocols for transporting data, such as user datagram protocol (UDP), transport control protocol (TCP), hypertext transfer protocol (HTTP), etc. Further, network **125** may include a variety of networks such as a wide area network (WAN), e.g., the Internet, a local area network (LAN), etc. As is known, packet switched network **125**, may be used to transport a variety of data, including multimedia data such as audio and video. Accordingly, it is to be understood that networks **125** and **145** may in fact be combined into a single network, or that video distribution network **145** may simply be omitted, whereby packet switched network **125** is used to provide video signal **150** to content processing device **110**, possibly through a video hub office as discussed above.

BHR **120** is known for distributing audio, video, and data to devices within customer premises **101**, such as content processing device **110**. For example, BHR **120** may be a broadband home router or wireless broadband home router from Actiontec Electronics, Inc. of Sunnyvale, Calif.

Computing devices such as content processing device **110**, IPG server **130**, etc. may employ any of a number of computer operating systems known to those skilled in the art, including, but by no means limited to, known versions and/or varieties of the Microsoft Windows® operating system, the Unix operating system (e.g., the Solaris® operating system distributed by Sun Microsystems of Menlo Park, Calif.), the AIX UNIX operating system distributed by International Business Machines of Armonk, N.Y., and the Linux operating system. Computing devices may include any one of a number of computing devices known to those skilled in the art, including, without limitation, a computer workstation, a desktop, notebook, laptop, or handheld computer, or some other computing device known to those skilled in the art.

Content processing device **110** generally is a specialized device for receiving media content, e.g., video signals, from head end **155** via network **145**, e.g., via a VHO, and may be provided with a proprietary or specialized operating system other than those enumerated above. For example, content processing device **110** may be an STB provided with a real time operating system (RTOS) such as is known. However, it is to be understood that content processing device **110** may be a computing device such as one of those enumerated above, so long as the computing device is capable of media content **150** from network **145**, and also is capable of storing and executing the instructions included in widget **105**. Generally, due to limited permanent memory in the content processing device **110**, widget **105** is downloaded to the device **110** from IPG server **130** when needed, and is stored in temporary memory. However, the widget **105** providing instructions to the device **110** for providing GUI **112**, e.g., as discussed herein, may be stored permanently in the device **110**.

Computing devices such as content processing device **110**, IPG server **130**, widget data server **135**, etc. generally each include instructions executable by one or more computing devices such as those listed above. Computer-executable instructions may be compiled or interpreted from computer programs created using a variety of programming languages and/or technologies known to those skilled in the art, including, without limitation, and either alone or in combination, Java™, C, C++, Visual Basic, JavaScript, Perl, etc. In gen-

eral, a processor (e.g., a microprocessor) receives instructions, e.g., from a memory, a computer-readable medium, etc., and executes these instructions, thereby performing one or more processes, including one or more of the processes described herein. Such instructions and other data may be stored and transmitted using a variety of known computer-readable media.

A computer-readable medium includes any medium that participates in providing data (e.g., instructions), which may be read by a computer. Such a medium may take many forms, including, but not limited to, non-volatile media, volatile media, etc. Non-volatile media include, for example, optical or magnetic disks and other persistent memory. Volatile media include dynamic random access memory (DRAM), which typically constitutes a main memory. Transmission media include coaxial cables, copper wire and fiber optics, including the wires that comprise a system bus coupled to the processor. Common forms of computer-readable media include, for example, a floppy disk, a flexible disk, hard disk, magnetic tape, any other magnetic medium, a CD-ROM, DVD, any other optical medium, punch cards, paper tape, any other physical medium with patterns of holes, a RAM, a PROM, an EPROM, a FLASH-EEPROM, any other memory chip or cartridge, a carrier wave as described hereinafter, or any other medium from which a computer can read.

Databases or data stores described herein may include various kinds of mechanisms for storing, accessing, and retrieving various kinds of data, including a hierarchical database, a set of files in a file system, an application database in a proprietary format, a relational database management system (RDBMS), etc. Each such database or data store is generally included within a computing device employing a computer operating system such as one of those mentioned above, and are accessed via a network in any one or more of a variety of manners, as is known. A file system may be accessible from a computer operating system, and may include files stored in various formats. An RDBMS generally employs the known Structured Query Language (SQL) in addition to a language for creating, storing, editing, and executing stored procedures, such as the PL/SQL language mentioned above.

FIG. 2A illustrates an exemplary display of media content **150** in a GUI **112**. As can be seen, FIG. 2A illustrates a three cell by three cell grid that includes nine cells. The size and dimensions of the grid shown in FIG. 2A, and subsequent figures, is exemplary and not limiting; GUI **112** could include grids of different dimensions and/or different numbers of cells. The cells included in GUI **112** include rotating cells **205** and non-rotating cells **210**. That is, widget **105** includes instructions to display, in each of the nine cells **205** or **210**, a channel of media content **150**. Generally, the channels of media content **150** are displayed in cells **205** as moving video images, e.g., according to the Motion Picture Experts Group (MPEG) standard or the like, and audio may be provided as discussed elsewhere herein, although still pictures or images could be displayed as well. The channels of media content **150** included in cells **205** are generally a subset of all of the channels of media content **150** available from media distribution network **145**, e.g., network **145** could provide one hundred or more channels of content **150**, and GUI **112** could include nine cells **205**.

Further, some or all of the channels of media content **150** available to content processing device **110** through the media distribution network **145** may be rotated (also referred to as “cycled”) through some or all of the rotating cells **205**. Widget **105** may include instructions for selecting channels of content **150** to be provided in rotating cells **205**. Because as many as all of the channels of content **150** available through media

5

distribution network **145** may be selected as rotating content **205**, many, e.g. hundreds or more, of channels of media content **150** may be available for inclusion in cells **205**. Thus, generally, GUI **112** will not provide as many rotating cells **205** as there are channels of content **150** available through media distribution network **145** and selected for inclusion in cells of rotating content **205**.

If, as will often be the case, more channels **150** are selected for rotating cells **205** than cells **205** are available, the channels of content may be provided according to some predetermined order of priority, e.g., channel number, alphabetic order of channel names, etc. Rotating cells **205** generally displays available channels on a round-robin basis, although it is possible to implement a weighting scheme or some other set of rules whereby some channels are included as rotating cells **205** more often than other channels.

Generally, selections of media content **150** for inclusion in rotating cells **205** are made by a provider of media content **150** and are included in IPG data **132** provided to widget **105**. However, widget **105** could include instructions for allowing a user to select channels of media content **150** to be included in cells of rotating content **205**. Further, widget **105** could include instructions for storing such selections in a computer readable medium included in content processing device **110**. Accordingly, a user could select channels to be included in the grid of GUI **112**, and have such selections persist across multiple viewing sessions, and could also modify such selections as desired.

The content of rotating cells **205** may be rotated, or cycled, according to a variety of mechanisms. For example, widget **105** could be programmed to cycle the contents of rotating cells **205** at periodic intervals, e.g., every 30 seconds. Additionally or alternatively, widget **105** could be programmed to cycle the contents of rotating cells **205** upon receiving a user command, e.g., via control **111**. Further, the order in which content is rotated may be determined according to instructions provided in widget **105**. Widget **105** could also be programmed to allow a user to specify the order in which content is rotated through the cells **205**.

Content may be rotated through the cells **205** in any order. For example, referring again to FIG. 2A, a channel of media content **150** might first be displayed in the cell **205** in the uppermost and leftmost position of GUI **112**, then be rotated to the right, and then to the leftmost cell **205** that is between the uppermost and bottom row of cells in the GUI **112**, i.e., to the leftmost cell **205** in the row that is in the vertical middle of the grid in the GUI **112**. In the example of FIG. 2A, when a channel of media content **205** reaches the cell **205** immediately to the left of non-rotating cell **210**, upon the next cycle, that channel of media content **150** is rotated out of the GUI **112**, i.e., is not displayed in any cells **205**. As mentioned above, channels of media content **150** not being displayed in GUI **112** may be queued for display according to instructions included in widget **105**.

In contrast to rotating content **205**, a non-rotating cell **210** includes a channel of media content that generally does not change. Rotating cells **205** generally display different channels of media content **150** at different times as described above. However, a non-rotating cell **210** generally displays a predetermined channel of media content **150** at a predetermined location in GUI **112**, and does not display any other channels of media content **150**, and does not change the content that it displays at different times. Thus, non-rotating cells **210** may also be referred to as fixed content **210**.

A channel of media content **150** to be displayed in a non-rotating cell **210** is generally predetermined by the provider of media content **150**. The selection of a channel for non-rotat-

6

ing cells **210** may be included in instructions included in widget **105**, or may be included in IPG data **132** provided to widget **105**. Further, although the figures herein illustrate only one non-rotating cell **210** in GUI **112**, it is possible to include two or more non-rotating cells **210** in GUI **112**.

As can be seen in FIG. 2A, when GUI **112** is instantiated, it generally will include a channel of media content **150** displayed in each of the cells **205** and **210**. Of course, other content could alternatively or additionally be displayed in the cells **205** or **210**. In any event, when multiple media, e.g., video, channels are included in cells **205** and **210**, widget **105** is generally programmed to select an audio stream associated with one of the channels to be provided via display **115**. For example, widget **105** may be programmed to select an audio stream associated with video being displayed in non-rotating cell **210**, whereby such audio is played through a speaker associated with the display **115**. If the GUI **112** includes more than one non-rotating cell **210**, then widget **105** may include instructions for selecting audio associated with one non-rotating cell **210**.

FIG. 2B illustrates an exemplary display of media content **150** in a highlighted cell **215**, along with rotating and non-rotating cells **205** and **210** in a graphical user interface. A highlighted cell **215** is generally selected by a user using control **111**. For example, control **111** may include arrow keys or the like, and widget **105** may include instructions to allow control **111** to provide input to content processing device **110** for scrolling amongst or otherwise indicating cells in the GUI **112**. An indicated cell could be highlighted automatically, or could be highlighted upon an input from the control **111**, e.g., selection of an "enter" key or the like. In display **115**, a highlighted cell **215** may be indicated by an emphasized border such as shown in FIG. 2B, by an icon placed in the cell **215**, etc.

Once a cell **215** is highlighted, the cell temporarily becomes, in essence, a non-rotating cell. That is, the cell **215** remains fixed in place much like a non-rotating cell **210**. Thus, even if channels of content **150** are cycled through rotating cells **205**, the channel of content **150** being displayed in the cell **215** will not change. However, when a cell **215** ceases to be highlighted, e.g., because input from control **111** has indicated that the cell is no longer to be highlighted, that focus should scroll to another cell, etc., what was the highlighted cell **215** reverts to a rotating cell **205**.

As mentioned above, generally by default audio associated with a non-rotating cell **210** is provided to be played via display **115**. As is discussed further below, it is also possible to select audio associated with another cell to be played via display **115**, e.g., according to input from control **111**. However, upon an indication of a highlighted cell **215**, widget **105** may include instructions to cause audio associated with the highlighted cell **215** to be provided via display **115**. Alternatively, indicating a highlighted cell **215** may have no effect on audio being played via display **115**.

The purpose of indicating a highlighted cell **215** may be to generate a locked cell **220**, such as is shown in FIG. 2C. In such event, a locked cell **220** that includes the channel of media content **115** that was displayed in the selected highlighted cell **215** may be placed at a predetermined location in the GUI **112**. For example, as shown in FIG. 2C, the content of the highlighted cell **215** shown in FIG. 2B is now included in a locked cell **220** that is displayed in the upper left corner of the grid included in GUI **112**. Alternatively, a locked cell **220** may be displayed in the grid at the location of a highlighted cell **215** from which the locked cell **220** was selected, or at some other location.

A locked cell 220, like a highlighted cell 215, is essentially a temporary non-rotating cell 210. That is, the channel of content 150 displayed in a locked cell 220 remains static while the content 150 displayed in cells 205 changes. When a locked cell 220 is selected, display 115 could be caused to provide audio associated with the content 150 being displayed in a locked cell 220. Alternatively, audio associated with the content 150 displayed in the locked cell 220 could be provided via display 115 according to input received via control 111.

Locked cells 220 may be unlocked, i.e., may revert to rotating cells 205, e.g., according to input received via control 111. Further, more than one locked cell 220 may be included in GUI 112. FIG. 2D illustrates indicating a highlighted cell 215, and FIG. 2E illustrates that highlighted cell 215 being selected as a second locked cell 220 in GUI 112. Moreover, FIG. 2F illustrates indicating a highlighted cell 215, and FIG. 2G illustrates that highlighted cell 215 being selected as a third locked cell 220 in GUI 112.

A comparison of FIG. 2H with FIG. 2I illustrates that a highlighted cell 215 may be indicated without generating a locked cell 220. FIG. 2H shows a highlighted cell 215 being the center cell in the grid in GUI 112. FIG. 2I shows a highlighted cell 215 being the cell immediately below the highlighted cell 215 of FIG. 2H. Thus, using arrow keys or some other mechanism, e.g., via control 111, different highlighted cells 215 may be selected.

FIG. 2J illustrates a full-screen display 225 of a channel of media content 150 in GUI 112. A channel of media content 150 may be selected for full-screen display 225 from a highlighted cell 215. For example, the highlighted cell 215 of the FIG. 2I could be indicated for full-screen display 225, e.g., according to input received from control 111, resulting in a full-screen display 225 as is illustrated in FIG. 2J.

FIG. 3 illustrates an exemplary process 300 for providing multi-view channels. Generally, process 300 is executed according to instructions stored in content processing device 110, e.g., instructions in widget 105. However, certain steps may be executed in conjunction with, or by other devices, e.g., devices accessed via network 125, such as IPG server 130.

Process 300 begins in a step 305, in which widget 105 and/or IPG data 132, as necessary, are downloaded to content processing device 110, e.g., from IPG server 130. Downloading widget 105 may be initiated upon various events, e.g., powering on content processing device 110, input received from control 111 to view GUI 112, etc. Thus, widget 105 may not be stored in a persistent memory of content processing device 110. However, as mentioned above, widget 105 and IPG data 132 may be downloaded to content processing device, stored in a memory, and then periodically updated, in which case step 305 may not be omitted from process 300.

Next, in step 310, content processing device 110 receives a request, e.g., an input from control 111, to display GUI 112. As mentioned above, steps 305 and 310 may be combined, e.g., a request to display GUI 112 may initiate downloading of widget 310. However, if widget 105 is already downloaded or stored in memory of content processing device 110, then step 310 may be executed separately.

Next, in step 315, content processing device 110 identifies a set of content 150, e.g., channels of content 150, to be included in cells included in GUI 112. In many implementations, all channels of media content 150 available through media distribution network 145 will be included in the set of content 150 identified in step 315. However, in some imple-

mentations, a content provider may wish for various reasons to exclude certain channels of content 150 from being included in GUI 112.

By default, selected channels of content 150 are generally included in rotating cells 205. However, as part of step 315, content processing device 110 generally identifies one or more channels of content 150 to each be included in a non-rotating cell 210. For example, a content provider may have certain channels of content 150 that the content provider wishes to showcase or promote to media consumers. Such channels of content 150 may be appropriate for non-rotating cells 210.

Next, in step 320, content processing device 110 provides GUI 112 for display on display device 115. For example, a display such as that described above with respect to FIG. 2A may be provided.

Next, in step 325, content processing device 110 selects an audio stream to be provided to display 115 along with GUI 112. As mentioned above, an initially-selected audio stream may be associated with a channel of content 150 included in a non-rotating cell 210.

Next, in step 330, content processing device 110 determines whether a rotating cell 205 in GUI 112 has been highlighted, thereby generating a highlighted cell 215, e.g., as described above with respect to FIG. 2B. If so, process 300 proceeds to step 365. Otherwise, process 300 proceeds to step 335.

In step 335, content processing device 110 selects audio associated with a channel of content 150 included in the highlighted cell 215 to be provided to display 115. Step 330 is an example of a step is optional. For example, content processing device 110 could continue providing audio associated with content 150 included in a non-rotating cell 210 even after a highlighted cell 215 is generated. Similarly, content processing device 110 could provide audio associated with content 150 included in a locked cell 220 even after a highlighted cell 215 is generated.

Following step 335, in step 340, content processing device 110 determines whether input has been received, e.g., from control 111, to lock or unlock the highlighted cell 215 detected in step 325. That is, if the cell 215 was a locked cell 220, i.e., is associated with a locked condition, then content processing device 110 determines whether input has been received to unlock the cell. Conversely, if the cell 215 was a rotating cell 205, then content processing device 110 determines whether input has been received to lock the cell. Non-rotating cells 210 generally are not available to be locked or unlocked, although such implementations are possible. In any event, if device 110 determines that input has been received to lock or unlock the highlighted cell 215, as appropriate, then process 300 proceeds to step 360. Otherwise, step 345 is executed next.

In step 345, content processing device 110 determines whether input has been received, e.g., from control 111, selecting a full-screen display of the highlighted cell 215. A full-screen display replaces GUI 112 as depicted in FIGS. 2A-2I with a full-screen display 225 of content 150, such as is illustrated in FIG. 2J. If such a request has been received, then step 375 is executed next. Otherwise, step 350 is executed next.

In step 350, content processing device 110 determines whether input has been received to release the highlighted cell 215 from a highlighted condition. If such input has been received, then step 355 is executed next. Otherwise, process 300 returns to step 340.

In step 355, content processing device 110 causes the highlighted cell 315 to be released from its highlighted condition.

As mentioned above, in general, releasing a highlighted cell 215 means that the cell 215 reverts to a rotating cell 205. Following step 350, process 300 returns to step 325. However, in implementations in which step 335 is omitted, process 300 may proceed to step 330 following step 355.

Step 360 follows step 340, as described above. In step 360, content processing device 110 locks or unlocks, as appropriate, and according to input identified in step 340, the highlighted cell 215 identified in step 330.

Next, in step 365, content processing device 110 determines whether an indication has been received to cycle, or rotate, rotating cells 205. As discussed above, cells 205 are generally rotated on a periodic basis, e.g., every 30 seconds, every minute, etc., following a previous rotation (or, for a first rotation, following the instantiation, and provision to display 115, of GUI 112). However, cells 205 could be rotated according to some other indication, e.g., input from control 111. If an indication to cycle rotating cells 205 has been received, step 370 is executed next. Otherwise, process 300 proceeds to step 330.

In step 370, cells 205 are cycled, or rotated. Cells 205 can be rotated in a variety of ways, as discussed above. Very often, rotating cells 205 includes adding a channel of content 150 to GUI 112 that was not displayed in the previous cycle, while dropping from GUI 112 a display of a channel of contents 150 that was included in GUI 112 in the previous cycle. As mentioned above, channels of contents 150 may be queued or otherwise stored for inclusion in the rotation of cells 205 in GUI 112. Following step 370, process 300 returns to step 330.

As mentioned above, step 375 follows the selection of a highlighted cell 215 for full-screen display in step 340. In step 375, the contents 150 of the highlighted cell 215 is provided to display 115 in a full-screen mode, e.g., as illustrated in FIG. 2J.

Process 300 ends following step 375. Certain steps could be omitted, and other steps could be added, to process 300 as described herein. For example, widget 105 could include instructions to allow a user to select an audio stream to be provided to display 115 when GUI 112 is being viewed. Accordingly, a step or steps could be included in process 300 for content processing device 110 to determine whether input was received from control 111 to select a specific cell 205, 210, or 220 to provide audio to display 115. Further, process 300 could end at a point other than following step 375. For example, process 300 could end when content processing device and/or display 115 are powered off, when input is received to end of the process 300, after a predetermined amount of time (e.g., 10 minutes), etc.

CONCLUSION

With regard to the processes, systems, methods, heuristics, etc. described herein, it should be understood that, although the steps of such processes, etc. have been described as occurring according to a certain ordered sequence, such processes could be practiced with the described steps performed in an order other than the order described herein. It further should be understood that certain steps could be performed simultaneously, that other steps could be added, or that certain steps described herein could be omitted. In other words, the descriptions of processes herein are provided for the purpose of illustrating certain embodiments, and should in no way be construed so as to limit the claimed invention.

Accordingly, it is to be understood that the above description is intended to be illustrative and not restrictive. Many embodiments and applications other than the examples provided would be apparent to those of skill in the art upon

reading the above description. The scope of the invention should be determined, not with reference to the above description, but should instead be determined with reference to the appended claims, along with the full scope of equivalents to which such claims are entitled. It is anticipated and intended that future developments will occur in the arts discussed herein, and that the disclosed systems and methods will be incorporated into such future embodiments. In sum, it should be understood that the invention is capable of modification and variation and is limited only by the following claims.

All terms used in the claims are intended to be given their broadest reasonable constructions and their ordinary meanings as understood by those skilled in the art unless an explicit indication to the contrary is made herein. In particular, use of the singular articles such as "a," "the," "said," etc. should be read to recite one or more of the indicated elements unless a claim recites an explicit limitation to the contrary.

The invention claimed is:

1. A method, comprising:
 - identifying, in a content processing device, a set of media channels to be provided in a graphical user interface;
 - selecting each channel in a subset of the channels that is to be assigned to a cell that is included in a set of cells in the graphical user interface, wherein at least a subset of the cells includes a plurality of rotating cells having cycling media content from the subset of the channels;
 - providing the graphical user interface to a display;
 - upon a predetermined indication, rotating at least some of the subset of the channels through the plurality of rotating cells, thereby changing the channel assigned to each of the rotating cells without user interaction each time the rotating is performed and according to a weighting scheme, wherein a first portion of the subset of the channels is included as rotating cells more often than a second portion of the subset of the channels;
 - locking the channel of at least one of the rotating cells in response to a user input such that the channel assigned to the locked rotating cell does not change while the other rotating cells change through at least some of the subset of the channels; and
 - unlocking the locked channel to revert the locked rotating cell to a rotating cell.
2. The method of claim 1, wherein at least one cell in the set of cells is a non-rotating cell.
3. The method of claim 1, wherein the predetermined indication is a determination that a predetermined amount of time has elapsed since one of the graphical user interface being provided to the display and a previous rotation.
4. The method of claim 1, further comprising highlighting a cell in the graphical user interface to temporarily designate the highlighted cell as a non-rotating cell.
5. The method of claim 1, further comprising providing a selected audio stream to the display along with the graphical user interface, wherein the selected audio stream is associated with one the media channels.
6. The method of claim 1, further comprising receiving a request to provide content included in one of the cells in a full-screen mode, and providing the content to the display in a full-screen mode.
7. A non-transitory computer-readable medium tangibly embodying computer-executable instructions including instructions for:
 - identifying a set of media channels to be provided in a graphical user interface;
 - selecting each channel in a subset of the channels that is to be assigned to a cell that is included in a set of cells in the

11

graphical user interface, wherein at least a subset of the cells includes a plurality of rotating cells having cycling media content from the subset of the channels;

providing the graphical user interface to a display;

upon a predetermined indication, rotating at least some of the subset of the channels through the plurality of rotating cells, thereby changing the channel assigned to each of the rotating cells without user interaction each time the rotating is performed and according to a weighting scheme, wherein a first portion of the subset of the channels is included as rotating cells more often than a second portion of the subset of the channels;

locking the channel of at least one of the rotating cells in response to a user input such that the channel assigned to the locked rotating cell does not change while the other rotating cells change through at least some of the subset of the channels; and

unlocking the locked channel to revert the locked rotating cell to a rotating cell.

8. The medium of claim 7, wherein at least one cell in the set of cells is a non-rotating cell.

9. The medium of claim 7, wherein the predetermined indication is a determination that a predetermined amount of time has elapsed since one of the graphical user interface being provided to the display and a previous rotation.

10. The medium of claim 7, the instructions further including instructions for highlighting a cell in the graphical user interface to temporarily designate the highlighted cell as a non-rotating cell.

11. The medium of claim 7, the instructions further including instructions for providing a selected audio stream to the display along with the graphical user interface, wherein the selected audio stream is associated with one the media channels.

12. The medium of claim 7, the instructions further including instructions for receiving a request to provide content included in one of the cells in a full-screen mode, and providing the content to the display in a full-screen mode.

13. A system, comprising:

a content processing device configured to receive, from a computer server, data concerning a set of media channels, and to:

selecting each channel in a subset of the channels that is to be assigned to a cell that is included in a set of cells in a graphical user interface, wherein at least a subset of the cells includes a plurality of rotating cells having cycling media content from the subset of the channels;

provide the graphical user interface to a display;

upon a predetermined indication, rotate at least some of the subset of the channels through the plurality of

12

rotating cells, thereby changing the channel assigned to each of the rotating cells without user interaction each time the rotating is performed and according to a weighting scheme, wherein a first portion of the subset of the channels is included as rotating cells more often than a second portion of the subset of the channels; and

lock the channel of at least one of the rotating cells in the graphical user interface in response to a user input such that the channel assigned to the locked rotating cell does not change while the other rotating cells change through at least some of the subset of the channels; and

unlock the locked channel to revert the locked rotating cell to a rotating cell.

14. The system of claim 13, wherein at least one cell in the set of cells is a non-rotating cell.

15. The system of claim 13, wherein the predetermined indication is a determination that a predetermined amount of time has elapsed since one of the graphical user interface being provided to the display and a previous rotation.

16. The system of claim 13, the content processing device further configured to highlight a cell in the graphical user interface.

17. The system of claim 13, the content processing device further configured to provide a selected audio stream to the display along with the graphical user interface, wherein the selected audio stream is associated with one the media channels.

18. The system of claim 13, the content processing device further configured to receive a request to provide content included in one of the cells in a full-screen mode, and providing the content to the display in a full-screen mode.

19. The method of claim 1, wherein the locked rotating cell is unlocked in response to a subsequent user input.

20. The method of claim 1, further comprising determining a priority order for the selected subset of the channels, based in part on another user input, in which to rotate the channels through the plurality of rotating cells.

21. The method of claim 20, wherein determining the priority order for the selected subset of the channels includes designating a first cell to receive a first channel after one rotation and a second cell to receive the first channel after a second rotation.

22. The method of claim 20, wherein the priority order is based upon a user input specifying which cells receive which of the selected subset of the channels.

23. The method of claim 20, wherein the priority order includes at least one of a channel number and an alphabetic order of channel names.

* * * * *